

Evaluation of Antibiotic Administration in Community Pharmacy

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Abstract

Introduction: Today, resistant microorganisms to antibiotics are not only encountered in hospitals, but they are also spreading more widely in the community. The aim of this study was to evaluate one of the factors of antibiotic resistance, the administration of antibiotics in the community pharmacies.

Materia and method: The study was conducted in an community pharmacy. The collected data covers the period of time April - June 2022, including a considerable number of patients and concrete cases. The base for data collection are the prescription of antibiotics by the family doctor and interviews with clients presented at the pharmacy.

Results: Referred our data 88.3% of the patients directed to the pharmacy had the doctor's prescription for the required antibiotics and 11.7% do not have it. The most used antibiotic for the period taken in the study is ciprofloxacin, 16%, followed by azithromycin (15.5%) and amoxiclav (10.9%). According to doctor's specialty, the most of antibiotic prescriptions were from urologist doctor 18.6% , followed by the pulmonologist 16.8% and the family doctor 15.9%.

Conclusions: Most of antibiotic are prescribe by doctor based in their experience and not to laboratory test results. In this situation is very important and urgent needs review national plan and protocols of antibiotic used in treatment of infections.

Key words: antibiotic resistance; doctor's speciality; antibiotic prescribe; community pharmacy

Introduction

Today, resistant microorganisms to antibiotics are not only encountered in hospitals, but they are also spreading more widely in the community [1]. Evidence report that the practices of self-medication with antibiotics and the inappropriate utilization of antibiotics are key factor in antibiotic resistance. In the majority of the cases these are connected to the pharmacists unsuitable antibiotics dispensing practices or non-enforcement of legislation on drug prescriptions [2]. According to a report developed by WHO, the self-medication treatment with antibiotics is generally widespread in the developing countries [3,4,5]. The recurrent utilization of self-medication with antibiotics in developing countries is related to several elements as particularly insufficient access to healthcare, accessibility to antibiotics sold without medical prescribe, deficiencies in local regulatory legislation and higher frequency of contagious diseases as compared to developed countries [6,7].

Pharmacies serve as the first and the last point of contact for the patients in the healthcare-seeking chain. So community of pharmacies play an important role in improving the criteria use of antibiotics and promote safe and effective administration of these medications [8,9].

In Albania, dispensing antibiotics is based on national legislations which prohibits sale of antibiotics without medical prescription. The pharmacist's community as part of the healthcare team, are the first point of contact of patients with drugs. The aim of this study was to evaluate one of the factors of antibiotic resistance, the administration of antibiotics in the community pharmacies.

Material and method

The study was conducted in an community pharmacy. The collected data covers the period of time April - June 2022, including a considerable number of patients and concrete cases.

The base for data collection are the prescription of antibiotics by doctors in the primary health care service and interviews with clients presented at the pharmacy. They are asked if performed the laboratory test(antibiogram) before received the antibiotic from doctor. The analyzed data includes: The antibiotic used with a doctor's prescription or not. Types of antibiotics prescribed by primary health care physicians. The

type of antibiotic and frequency prescribed according to pathologies. Data were analyzed by performing descriptive statistics and processed using Microsoft Excel software.

Results

Doctors speciality	With prescription No(%)	Without prescription No(%)	Laboratory testing		
			Yes No(%)	No No(%)	Don't know No(%)
Family doctor	41 (15.9%)		13(31.7%)	20(48.7%)	8(19.5%)
Urologist	48(18.6%)		22(45.8%)	20(41.6%)	6(12.5%)
Pulmonologist	43(16.8%)		-	43(100%)	-
Otolaryngologists	18(7%)		1(5.55%)	14(77.8%)	3(16.7%)
Dermatologist	29(11.3%)		5(17.2%)	24(82.73%)	
Gynecologist	25(9.7%)		5(20%)	20(80%)	
Gastroenterologist	32(12.5%)		-	30(93.75%)	2(6.25%)
Pediatrics	21(8.2%)		-	21(100%)	
Total	257(88.3%)	34(11.7%)	46(17.9%)	192(74.7%)	19(7.4%%)

Table No1. Distribution of cases of antibiotic prescribe

Referred the data in the table No.1 88.3% of the patients directed to the pharmacy had the doctor's prescription for the required antibiotics and 11.7% do not have it. Also referred interviews with clients presented at

the pharmacy our data show that 46% of antibiotic prescribed by doctor based on laboratory test, 74.7% are not based in laboratory test and 7.4% of them referred don't know.

The antibiotic No (%)	Family doctor	Urologist	pulmonologist	Otorhinolaryngology (ORL)	Dermatologist	Gynecologist	Gastroenterologist	Paediatrics	Total No (%)
Amoxiclav	16(39%)			6(33%)				6(28.6%)	28(10.9)
Azithromycin	18 (43.9%)		22(51.2%)						40(15.5)
Ciprofloxacin	7(17.1%)	13 (27.1%)				12(4%)	9(28.1%)		41(16)
Bactrim		18(37.5%)							18(7)
Fosfomycin		10(20.8%)							10(3.9)
Nitrofurantoin		7(14.6%)							7(2.5)
Ceftriaxone			14(32.5%)						14(5.5)
Cefaclor			5(11.6%)						5(2)
Doxycycline			2(4.7%)		15(51.7%)				17(6.6)
Erythromycin					11 (38%)				11(4,3)
Cephalexin					3(10.3%)				3(1.2)
metronidazole						8(32%)	17(53.1%)		25(9.7)
Clindamycin						5(20%)			5(2%)
Clarithromycin							6(18.8%)		6(2.3)
Amoxicillin				9(50%)				11(52.4%)	20(7.8)
Cefixime								2 (9.5%)	2(0.7)
Cefibuten								2(9.5%)	2(0.7)
Cefinex				3(16.7%)					3(1.2)
total No(%)	41(15.9%)	48(18.6)	43(16.8%)	18(7%)	29(11.3)	25(9.7)	32(12.5)	21(8.2)	257

Table No 2 : Frequency of antibiotic use.

Data on table No.2 show that the most used antibiotic for the period taken in the study is ciprofloxacin, 16%, followed by azithromycin (15.5%) and amoxiclav (10.9%). According to doctor's specialty, the most of antibiotic prescriptions are from urologist doctor 18.6% , followed by the pulmonologist 16.8% and the family doctor 15.9%.

Discussion

The overall volume of antibiotic consumption in the community is one of the foremost causes of antimicrobial resistance. In developing countries, pharmacists often dispense drugs, like antibiotics, to patients who do not have a medical prescription. According to the WHO, it has been estimated

that more than 50% of the antibiotics worldwide are sold without medical prescription. In addition, high resistance rates are noted in communities where antibiotic sales without prescription are common practices.(10 , 11). Also, this phenomenon was more evident during the current COVID-19 pandemic where there was not only an increase amount of antibiotics used but and the use of antibiotics without a doctor's recommendation because of many patients turn to the pharmacy to buy antibiotics based on similar experiences or fear of Covid 19 virus complication [12].

Self-treatment with antibiotics based on the similar experience of family members or friends, the prescription of antibiotics by the doctor without being based on the results of the laboratory test but on their clinical

experience, sales from pharmacies without a doctor's prescription are problems encountered in daily practice in the treatment of different diseases affecting antimicrobial resistance [13,14,15,16]. The public practices of self-medication with antibiotics and the pharmacists practices of non-prescribed antibiotic sale has been extensively investigated all over the world [17,18,19,20].

In Albania we haven't data about administration of antibiotic in community pharmacies related to medical prescription. So in this study we have analysed administration of antibiotic in one of the community pharmacies during a period of time of 3 months. Our data in this study show that most of antibiotic used from outpatient 88.7% are prescribed by doctors and 11.7% of case represent to pharmacy haven't doctor prescription (table 1). The change was statistically significant ($p < 0.05$).

Most of patients represented without medical description declared that they were looking for the antibiotic based on their previous experiences, similar history of their relatives or haven't time to go to the doctors. Based in our legislation the pharmacist haven't sold antibiotic to these patients. The orientation towards the pharmacy and the phenomenon of seeking an antibiotic without counseling with the doctor it exists, although in a lower percentage. This continuing to be a major problem for public health, because taking them without the appropriate prescribe by the doctor or without first performing the necessary laboratory tests can later lead to the appearance of a antimicrobial resistance. These phenomena are more frequent in the low and middle-income countries where the burden of infectious disease is high [10,13,21,22].

During period of study, all patient presented to the pharmacy were asked if they had done a laboratory test/antibiogram before the antibiotic was prescribed by the doctor. Our results show that only 17.9% of patients include in study was performed the laboratory test before antibiotic prescribe by doctor, 7.4% answered don't know and 74.7% haven't done laboratory test but antibiotic was prescribe by doctors based on their experience. Referred our results in this survey (table no1) pediatric and pneumologist doctors prescribe the antibiotic (100% of cases) without antibiogram test referring their experience only. Some specialist doctors as gastroenterologist, otorhinolaryngologist, dermatologist and gynecologist performed the antibiogram test in a small number of cases, which varies from 2% to 20%. While other specialist doctors as family and urologist doctor performed antibiogram test before prescribe antibiotic 31% to 45.8% of presented cases. These data are statistical significant ($p < 0.05$).

Although some infections are common and do not cause serious problems, or require a short treatment time, or are simple to diagnose, special attention should be paid to antibiotic treatment due to the increased prevalence of these infections, costs, morbidity, recurrences and most importantly antibiotic resistance [13,20]. According to the specialty of doctors, the most of antibiotic prescriptions were from urologist doctor 18.6% followed by the pneumologist 16.8% and the family doctor 15.9%. Also in the study we analysed the frequent of antibiotic used and their distribution according to pathology. Our data show that more prescribe antibiotic are ciprofloxacin (16%), followed by azithromycin (15.5%) and amoxiclav (10.9%). According to the recipes reviewed, azithromycin was prescribed the most from family doctor, Ciprofloxacin 27.1% and Bactrim 37.5% was prescribed the most in pathology of urinary tract. Azithromycin 51.2% Ceftriaxone 32.5% were prescribed in pulmonary pathology. The increase in the prescription of azithromycin also came as a result of Covid-19 infection, in the treatment of respiratory infections. The highest percentage of doxycycline, with 51.7%, followed by erythromycin (38%) were described in skin pathology. Ciprofloxacin (48%) and clindamycin (20%) were prescribed the most in women genital tract pathologies. Metronidazole were prescribed more in gastrointestinal with 53.1% and women genital tract pathology 32%. amoxicillin and

amoxiclav were used more in pediatrician and in pathology of neck and head (otorhinolaryngology).

Conclusion

Our results show high antibiotic usage at community pharmacies (18 type of antibiotics), particularly the highest percentage is occupied by antibiotics with a broad spectrum of activity as azithromycin, ciprofloxacin and amoxiclav. Most of antibiotic are prescribe by doctor based in their experience and not to laboratory test results. In this situation is very important and urgent needs review national plan and protocols of antibiotic used in treatment of infections. Moreover monitoring of implementing the national legislation by pharmacist during antibiotic administration aiming to minimized the sale of antibiotic without prescription of doctors and general public education about antibiotic effect and complications.

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